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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,888	12/29/2005	Orlando Miguel Pires Dos Reis Moreira	NL 030769	6924

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
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BRIARCLIFF MANOR, NY 10510

EXAMINER
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HUISMAN, DAVID J

ART UNIT	PAPER NUMBER
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2183

MAIL DATE	DELIVERY MODE
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10/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/562,888

Applicant(s)

PIRES DOS REIS MOREIRA ET AL.

Examiner

David J. Huisman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/16/2007.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-7 have been examined.

#### ***Papers Submitted***

2. It is hereby acknowledged that the following papers have been received and placed of record in the file: Documents Submitted with 371 Application, Certified Copy of Foreign Priority Document, and Authorization for Extension of Time for All Replies as received on 12/29/2005, and IDS are received on 2/16/2007.

#### ***Information Disclosure Statement***

3. Rule 37 CFR 1.98 requires that "Each publication listed in an information disclosure statement must be identified by publisher, author (if any), title, relevant pages of the publication, date, and place of publication." Applicant has failed to do so for non-patent literature documents 1 and 2. Consequently, these references have not been considered by the examiner. As reference 1 appears to be very related to the instant application, applicant should provide all of the above required information so that the examiner can determine if it constitutes valid prior art. In addition, a copy of reference 5 was not provided, and therefore, it has not been considered because the rule also states that an IDS must include a legible copy of "each publication or that portion which caused it to be listed, other than U.S. patents and U.S. patent application publications unless required by the Office".

*Specification*

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

*Comments*

5. It has been noted that applicant originally filed seven claims and then replaced the set of seven claims with a set of three claims. However, applicant does not give any indication as to the cancellation of the original claims, and instead improperly begins numbering new claims at #1. Applicant is advised to review rule 37 CFR 1.121 so that proper amendments are made in the future. NOTE: Applicant's future amendments must include the status of the seven original claims and include renumbering of any claims filed since the original seven.

*Claim Objections*

6. Claim 1 is objected to because of the following informalities:
- On page 18, lines 10 and 16, (CCE1, CCE2, ...) should be clarified and written in more definite terms. Specifically, the "..." should be eliminated. For instance, in lines 15-16, applicant could amend the claim to say "a chain of at least two cluster control elements (CCE1, CCE2)".
  - On page 18, line 11, replace "procesor" with --processor--.
  - On page 18, line 11, the transition to "two processor elements belonging to the same cluster..." is grammatically incorrect. Applicant should reword the claim as this phrase does not appear to be related to the preceding language.

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- On page 18, lines 13-14, replace “those” with --the--
- On page 18, line 17, relocate “WSL” to after “first wait signal line” in line 16 for increased clarity.
- On page 18, line 19, replace “these signals” with --the wait signals--.

7. Claim 3 is objected to because of the following informalities:

- On page 19, line 1, please replace “the indicator” with --each indicator--.
- On page 19, lines 6-7, the transition to “two processor elements belonging to the same cluster...” is grammatically incorrect. Applicant should reword the claim as this phrase does not appear to be related to the preceding language.
- On page 19, line 8, replace “those” with --the--

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 1 is first unclear because in lines 9-10, applicant claims a cluster control facility and then identifies the singular facility with multiple identifiers (CCE1, CCE2, ...), which is unbounded. These same identifiers are used to identify control elements in lines 15-16. Clearly, the same identifier can't be used to identify two different things.

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11. Claim 1 is further unclear because it recites the limitations:

- "the processor element" in line 7 on page 18. There is insufficient antecedent basis for this limitation in the claim because it is not clear which processing element applicant is referring to (first or second). Applicant could replace such language with --a corresponding processor element--. Then, in line 8, applicant should replace "the processor element" with --the corresponding processor element--. Furthermore, in line 13, replace "those two processor elements" with --the corresponding and related processing elements--.
- "the related processor element" in line 7 on page 18. There is insufficient antecedent basis for this limitation in the claim because it is not clear which processing element applicant is referring to (first or second). Applicant could replace such language with --a related processor element--.

12. Claims 2 is rejected under 35 U.S.C 112, 2<sup>nd</sup> paragraph, for being indefinite, because they are dependent, either directly or indirectly, on an indefinite claim.

13. Claim 3 is further unclear because it recites the limitations:

- "the processor element" in line 2 on page 19. There is insufficient antecedent basis for this limitation in the claim because it is not clear which processing element applicant is referring to (first or second). Applicant could replace such language with --a corresponding processor element--. Then, in lines 3-4 on page 19, applicant should replace "the processor element" with --the corresponding processor element--. Furthermore, in line 13, replace "those two processor elements" with

--the corresponding and related processing elements--.

- "the related processor element" in lines 2-3 on page 19. There is insufficient antecedent basis for this limitation in the claim because it is not clear which processing element applicant is referring to (first or second). Applicant could replace such language with --a related processor element--.

***Claim Rejections - 35 USC § 102***

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Gupta et al., EP Patent Application Publication No. 0403014 A2 (as disclosed by applicant and herein referred to as Gupta).

16. Referring to claim 1, Gupta has taught a processor system comprising at least a first and a second processor element (PE1, PE2) (see Fig.1, components 30, i.e., P1-P4), the first processor element (PE1) having a cluster request indicator (CR12) related to the second processor element (see Fig.4, component 72, and column 10, lines 30-46) and the second processor element (PE2) having a cluster request indicator (CK21) related to the first processor element (see Fig.4, component 72, and column 10, lines 30-46), the processor elements having an instruction set enabling dynamic control of the indicators (see Fig.3 and column 6, line 49, to column 7, line 27; note that the processors are synchronized, via indicator control, in response to instructions in the

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instruction set), the indicators (CR12, CR21) having a value range comprising at least a first value (positive indicator) indicating that the processor element requests to form a cluster with the related processor element (see column 10, lines 41-46), and a second value (negative indicator) indicating that the processor element does not request to form a cluster with the related processor element (see column 10, lines 41-46), the system further comprising a cluster control facility (CCE1, CCE2, ...) which detects the value of the cluster request indicators and organizes the processor elements in clusters (see Figs.4-5), in accordance with the detected values, two processor elements belonging to the same cluster if they have positive indicators related to each other (see column 9, lines 40-43, and column 10, lines 41-46; positive indicators indicate masking-in or clustering), or if there is a sequence of processor elements comprising those two processor elements (see column 9, lines 40-43, and column 10, lines 41-46; negative indicators indicate masking-out or non-clustering), wherein each pair of subsequent processor elements has positive indicators related to each other, the cluster control facility comprising a chain of cluster control elements (CCE1, CCE2, ..) (see Fig.4, at least component 76) which are coupled to each other via a first wait signal line and a second wait signal line (WSL, WSR) (see Fig.4, and column 11, lines 2-5; note the want\_in and want\_out signals), the wait signal lines carrying a signal indicative of whether processor elements coupled to that line should suspend their activities, the cluster control elements being able to modify these signals (see Fig.5 and column 4, lines 11-18; a want\_out wait signal indicates that synchronization is to occur and that the processor should stall its activities if it has reached the end of processing a shaded, independent region of code).



17. Referring to claim 2, Gupta has taught a processor system according to claim 1, wherein elements organized in a cluster operate under a common thread of control. See Fig.3 and column 3, lines 44-58, and note that when a cluster is formed all instructions branch based on the comparison operation executed by a single processor.

18. Referring to claim 3, Gupta has taught a method for operating a system comprising at least a first and a second processor element (see Fig.1, components 30, i.e., P1-P4), the method comprising programmably controlling a cluster request indicator of the first processor element related to the second processor element (see Fig.4, component 72, and column 10, lines 30-46) and programmably controlling a cluster request indicator of the second processor element related to the first processor element (see Fig.4, component 72, and column 10, lines 30-46), the indicator having a value range comprising at least a first value (positive indicator) indicating that the processor element requests to form a cluster with the related processor element (see column 10, lines 41-46), and a second value (negative indicator) indicating that the processor element does not request to form a cluster with the related processor element (see column 10, lines 41-46), detecting the value of the cluster request indicators and organizing the processor elements in clusters in accordance with the detected values (see Figs.4-5), two processor elements belonging to the same cluster if they have positive indicators related to each other (see column 9, lines 40-43, and column 10, lines 41-46; positive indicators indicate masking-in or clustering), or if there is a sequence of processor elements comprising those two processor elements (see column 9, lines 40-43, and column 10, lines 41-46; negative indicators indicate masking-out or non-clustering), wherein each pair of subsequent processor elements has positive indicators related to each other, the step of organizing the processor elements in clusters comprising the following

substeps, receiving an input value for a first wait signal and providing an output value for said signal indicating whether the processor receiving said signal is forced to suspend its activities (see Fig.4, and note the want\_in input signal and the MATCH output signal. The MATCH output signal, when in one state, causes stalling (see state 3 in Fig.5)), the output value depending on the input value and a first and a second cluster request indicator (from Fig.4, and column 10, lines 46-50, MATCH depends on want-in, which is a multi-bit signal coming from other processors of the cluster), receiving an output value for a second wait signal and providing an output value for said signal indicating whether the processor receiving said signal is forced to suspend its activities, the output value depending on the input value and the first and the second cluster request indicator. See the want\_out signal of Fig.4, which is also received as feedback by the state machine to advance between the states of Fig.5. The want\_out causes stalling when the other processors are not synchronized, as shown in state 3 of Fig.5), and the signal depends on MATCH, which is in turn dependent on want\_in, which means that want-out is dependent on the input value want\_in, and it is further dependent on the request indicators because MATCH is dependent on the request indicators of Fig.4.

### *Conclusion*

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made. Applicant must also show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

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Dowling, U.S. Patent No. 6,026,478, has taught a VLIW machine with fork and join instructions for clustering processors to work on the same task or splitting them to work on separate tasks.

Kranich et al., U.S. Patent No. 6,574,725, has taught fork and join instructions and also the use of sync instructions to synchronize processors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Huisman whose telephone number is (571) 272-4168. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJH  
David J. Huisman  
October 1, 2007

